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New records of *Tillandsia* L. (Bromeliaceae, Tillandsioideae) for Maranhão state, Brazil

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Abstract

We report the first records of *Tillandsia kegeliana*, *T. loliacea*, *T. paraensis*, *T. parvispica*, *T. recurvata*, and *T. tenuifolia* for Maranhão, Brazil. These species were collected in the Amazonian and Cerrado biomes. This work adds new knowledge to the flora of Maranhão and extends the distribution of these species within Brazil.

Key words

Biodiversity; new record; geographic distribution; taxonomy; bromeliads.

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Introduction

Maranhão state, located in northeastern Brazil, has a large area of nearly 332 thousand km^2 (IBGE 2017). It borders the Atlantic Ocean in the north, Piauí state in the east, Tocantins state in the south and southwest, and Pará state in the west and northwest (EMBRAPA 2013).

Maranhão state is located in a transition zone from the semi-arid climates of the interior of the northeast to the equatorial wetlands of Amazonia at the confluence of the Amazon, Cerrado, and Caatinga biomes (Maranhão 2011). Several ecosystems can be observed, from saline environments with mangroves, through flooded, enclosed and "babaçuais" fields, to large forest vegetation with Amazonian characteristics (Muniz 2006). With such diverse vegetation, a high number of species is expected to occur. However, the Brazilian Flora Group reports 2,855 species of angiosperms, with only 38 endemic species (BFG 2015).

Studies on the flora of Maranhão are limited and restricted to specific areas. The usual focus is on floristic or ethnobotanical aspects of individual taxonomic groups and highlights uniqueness and floristic importance (e.g. Silva et al. 2008, Fernandes et al. 2010, Conceição et al. 2010, Linhares et al. 2011, Conceição et al. 2011, Nunes et al. 2012, Rodrigues and Conceição 2014, Santos et al. 2014, Silva et al. 2016, Ferreira et al. 2017, Guarçoni et al. 2018).

Bromeliaceae Juss. is notable for its high diversity in the Neotropics and for its ecological association with a

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diverse micro -flora and fauna. Due to the spiral arrangement of leaves, several species can accumulate water and microorganisms and promote the development organic material (Benzing 2000). The family has representatives of life forms ranging from mesomorphic to extreme xeromorphic (Smith and Downs 1974). Despite its wide diversity and ecological importance, research on bromeliads in Maranhão and few data are documented in the literature. Only 13 species are listed for this state (Flora do Brasil 2018), and only *Tillandsia usneoides* L. represents the genus.

Tillandsioideae Harms is monophyletic, and 1 of the 8 subfamilies assigned to Bromeliaceae (Givnish et al. 2007). Recently, Barfuss et al. (2016) revised the taxonomy of the subfamily and circumscribed 4 tribes that constitute 6 subtribes and 21 genera based on new or re-evaluated morphological characters and DNA sequence data.

Tillandsia L. (Tillandsioideae) is included in tribe Tillandsieae Rchb. along with 7 other genera: *Barfussia* Manzan. & W. Till, *Gregbrownia* W. Till & Barfuss, *Guzmania* Ruiz & Pav., *Lemeltonia* Barfuss & W. Till, *Pseudalcantarea* (Mez) Pinzón & Barfuss, *Racinaea* M.A. Spencer & L.B. Sm. and *Wallisia* (Regel) E. Morren (Barfuss et al. 2016).

Tillandsia is the most species-rich genus in the subfamily with 739 species (Gouda et al. 2018) occurring from southern United States to the Antilles, central Argentina, and Uruguay, with centers of diversity in northern Central America and the northern and central Andes (Barfuss et al. 2016). A total 87 species are reported for Brazil, with 50 endemic species (57.4%), occurring in all biomes (Flora do Brasil 2018). The genus is divided into 7 subgenera: *Aerobia* Mez, *Anoplophytum* (Beer) Baker, *Diaphoranthema* (Beer) Baker, *Phytarrhiza* (Vis.) Baker, *Pseudovriesea* Barfuss & W. Till, *Tillandsia* L. and *Viridantha* (Espejo) W. Till & Barfuss. These subgenera are based on lifestyle, habit of adults, presence of the central tank of adult, flower disposition, connation of petals, presence of petal appendages, connation of filaments, and stigma type (Barfuss et al. 2016).

Recently, as part of a floristic inventory of the family Bromeliaceae in the state of Maranhão, 6 species of *Tillandsia*, previously known only from other Brazilian states and other countries, were located.

Methods

Our study was based on field collections, a literature review (Mez 1896, Smith and Downs 1977, Siqueira-Filho and Leme 2006, Pontes and Agra 2006, Fiorato 2009, Barfuss et al. 2016), and the websites (Flora do Brasil 2018, SpeciesLink 2018). Type specimens were consulted through digital collections of herbaria US and P (acronyms according Thiers 2018). The identifications were confirmed by consulting the protologues of the taxa.

Vouchers of these new records were incorporated in the herbarium MAR, of the Department of Biology of the Federal University of Maranhão, Don Delgado campus and in the new herbarium at the Bacabal campus, of the same university (BMA).

The classification of the vegetation followed the local names and the corresponding terms in the "Manual Técnico da Vegetação Brasileira" (IBGE 2012).

The map was prepared using QGIS 2.14.0, using the SAD 1969 datum.

Results

We confirm the occurrence of 7 species of *Tillandsia*, belonging to 3 subgenera, for the state of Maranhão: *T.* subg. *Anoplophytum* (*T. tenuifolia* L.), *T.* subg. *Diaphoranthema* (*T. loliacea* Mart. ex Schult. & Schult. f. and *T. recurvata* L. and *T. usneoides*, the only species previously cited) and *T.* subg. *Tillandsia* (*T. kegeliana* Mez, *T. paraensis* Mez and *T. parvispica* (L.) L.).

In Maranhão, *T. kegeliana*, *T. paraensis*, and *T. tenuifolia* were found in the Amazonian biome, and *T. loliacea*, *T. parvispica*, and *T. recurvata* in the Cerrado biome (Fig. 1).

***Tillandsia kegeliana* Mez,** in DC., Monogr. Phan. 9: 725. 1896.
Figure 2A, B

Type. *Kegel 881* (lectotype GOET, US photo), Paramaribo, Suriname.

Identification. Plant: epiphyte, 13.3–13.5 cm tall when flowering; roots present, rigid; stem inconspicuous. Leaves: polystichous, forming rosettes, imbricated, reflexed; sheath 2.3–4 × 2.2–3.2 cm, distinct from blade, ovate, cinereous with the adaxial surface purple; blade 7–9.7 × 0.5–0.8 cm, narrowly-triangular, revolute, apex long attenuated, cinereous lepidote. Peduncle 4–7 cm long; peduncle bracts 2.5–2.7 × 0.5–0.8 cm, narrowly-elliptic to triangular, exceeding the internodes, imbricate, apex long-caudate. Inflorescence: 4.5–6.5 cm long, simple, pendulous, complanate, exceeding the leaves; floral bracts: 2.6–3.3 × 1.3–2.1 cm, ovate to elliptic, apex apiculate, the lower ones strongly incurved, carinate, involving the sepals, orange to red, fleshy, minutely rugulose and blackish when dry. Flowers: 8–10, distichous; sepals 2.3–2.5 × 0.9–1 cm, elliptic, short-connate, ecarinate, apex apiculate, green with apex reddish, glabrous; petals ca 3 × 0.4 cm, elliptic, apex acute, slightly recurved tip, violet; stamens ca 3.2 cm long, exserted, adnate to the base of ovary; filaments compressed, slender; ovary ca 5 mm, long pyramidal; style 2.4–2.6 cm long, cylindrical, exserted; stigma conduplicate-spiral. Fruit: capsule, 5 cm long, dark green. Seeds: unknown.

New records. Brazil: Maranhão: Santa Helena, rio Turiaçu, região dos Três Furos (02°07′ S, 045°44′ W), 22.V.2015 (fl.), *A.W.C. Ferreira 201* (BMA 1058); na divisa com o município de Presidente Sarney, na mar-

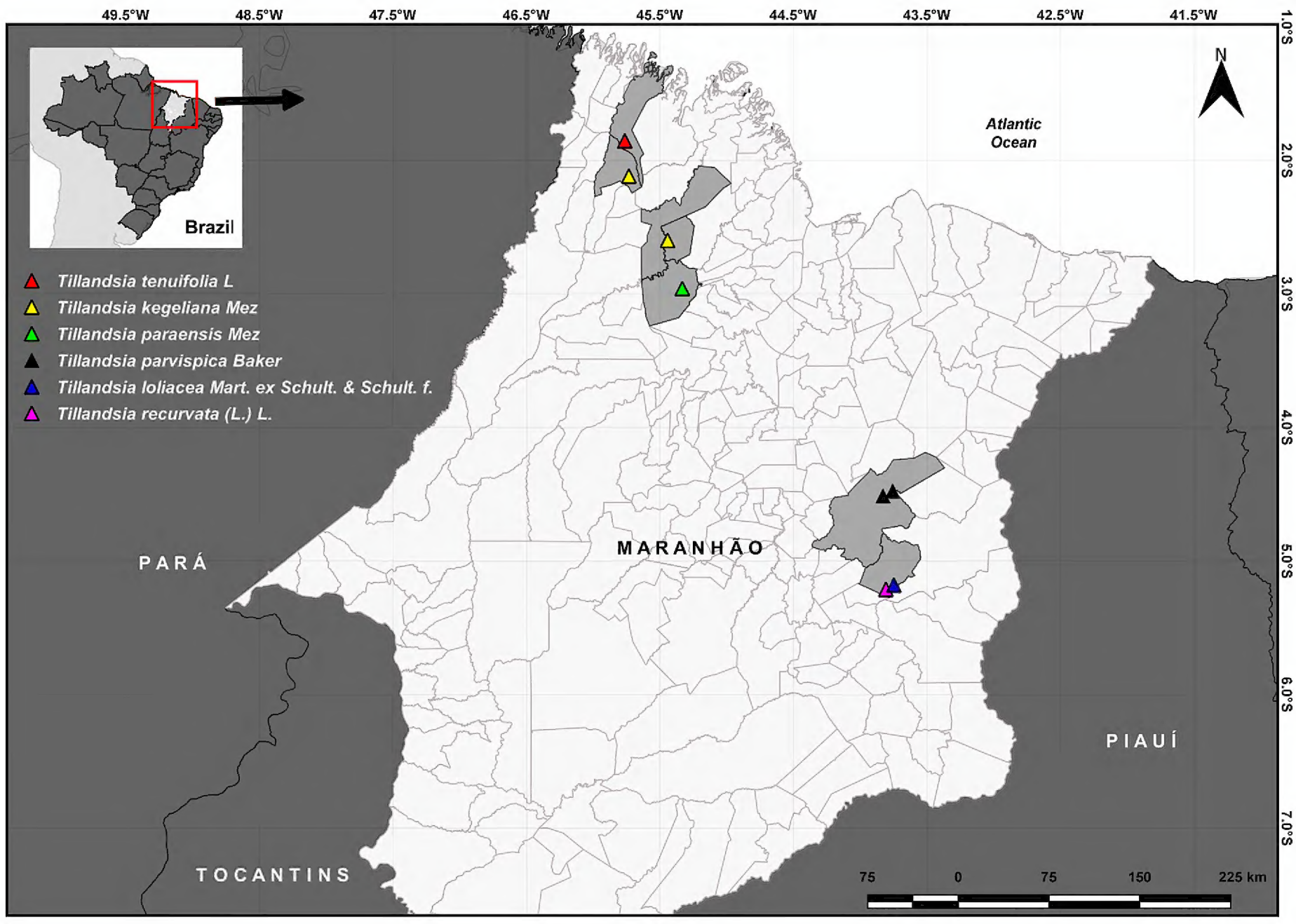

Figure 1. Geographical distribution of new records of *Tillandsia* for Maranhão state, Brazil.

gem do rio Turiaçu, localidade dos Três Furos (02°35′51″ S, 045°26′46″ W), 10.IV.2015 (fl.), *A.W.C. Ferreira 200* (MAR 10923).

***Tillandsia loliacea* Mart. ex Schult. & Schult. f.**, Syst. Veg. 7: 1204. 1830.
Figure 2C, D

Type. *Martius s n* (holotype M, GH photo), Monte Santo, Joazeiro, Bahia, Brazil, 1818.

Identification. Plant: epiphyte or rupicolous, 11.2–11.7 cm tall when flowering; roots present, rigid. Leaves: polystichous, forming rosettes, imbricated, erect; sheath 2–4 mm long, indistinct from blade; blade 1–2.9 cm long, linear-triangular, flat, apex attenuated, green, cinereous lepidote. Peduncle 2.5–5 cm long, flexuosous; peduncle bracts 7–15 × 3–4 mm, elliptic to lanceolate, equaling the internodes, apex short caudate, green, cinereous lepidote. Inflorescence: 1–2 cm long, simple, erect, not complanate, exceeding the leaves; floral bracts: 5–6 × 4–5 mm, elliptic, apex acute, greenish, densely cinereous lepidote. Flowers: 2–3, distichous; sepals ca 7 × 2 mm, elliptic-lanceolate, shot-connate, ecarinate, apex acuminate, green, glabrous to slightly white-lepidote; petals ca 8 × 1.5 mm, linear, apex rounded, recurved, yellow; stamens ca 4 mm long, included, adnate to the base of ovary; filaments cylindrical; ovary ca 1.2 mm long, narrowly-obovate; style ca 1 mm long, subtriangular; stigma simple-erect. Fruits: capsule, 2.1–3.7 cm long, dark green. Seeds: 1.5–3 cm long.

New records. Brazil: Maranhão: São João do Sóter, Fazenda Boa Vista, à margem da estrada, próximo ao rio Itapecuru (05°11′32″ S, 043°44′51″ W), 30.VII.2015 (fl. e fr.), *A.W.C. Ferreira et al. 202* (MAR 10924; BMA 1746).

***Tillandsia paraensis* Mez**, in Martius, Eichler & Urban, Fl. Bras. 3: 586, t. 109. 1894.
Figure 2E, F

Type. *Sieber 68* (holotype BR, GH photo), Para, Brazil, 1826.

Identification. Plant: epiphyte, 10–20 cm tall when flowering; roots present, rigid; stem inconspicuous. Leaves: polystichous, imbricated in basal region, forming a subbulbous rosette; sheath 2–4 cm long, ovate; blade 7–9 × 1–2 cm, triangular-lanceolate, apex attenuated, green, white lepidote in the abaxial face with trichomes concentrated between the ribs. Peduncle 6–8 cm long; peduncle bracts 2.8–3.5 cm × 0.5–0.9 cm, elliptic to lanceolate, apex apiculate, exceeding the internodes, rose, glabrous. Inflorescence: 5.0–9.0 cm long, simple, erect or curved; floral bracts: 2.5–3.9 × 1.3–1.8 cm, elliptic, apex obtuse, greenish, densely lepidote. Flowers: 5–8, distichous; sepals 2.2–2.4 × 0.7–0.9 cm, elliptic, free, carinate, apex acute, rose, sparsely lepidote, wholly covered by the floral bracts; petals 3–4 × 0.9–1.1 cm, linear, apex obtuse,

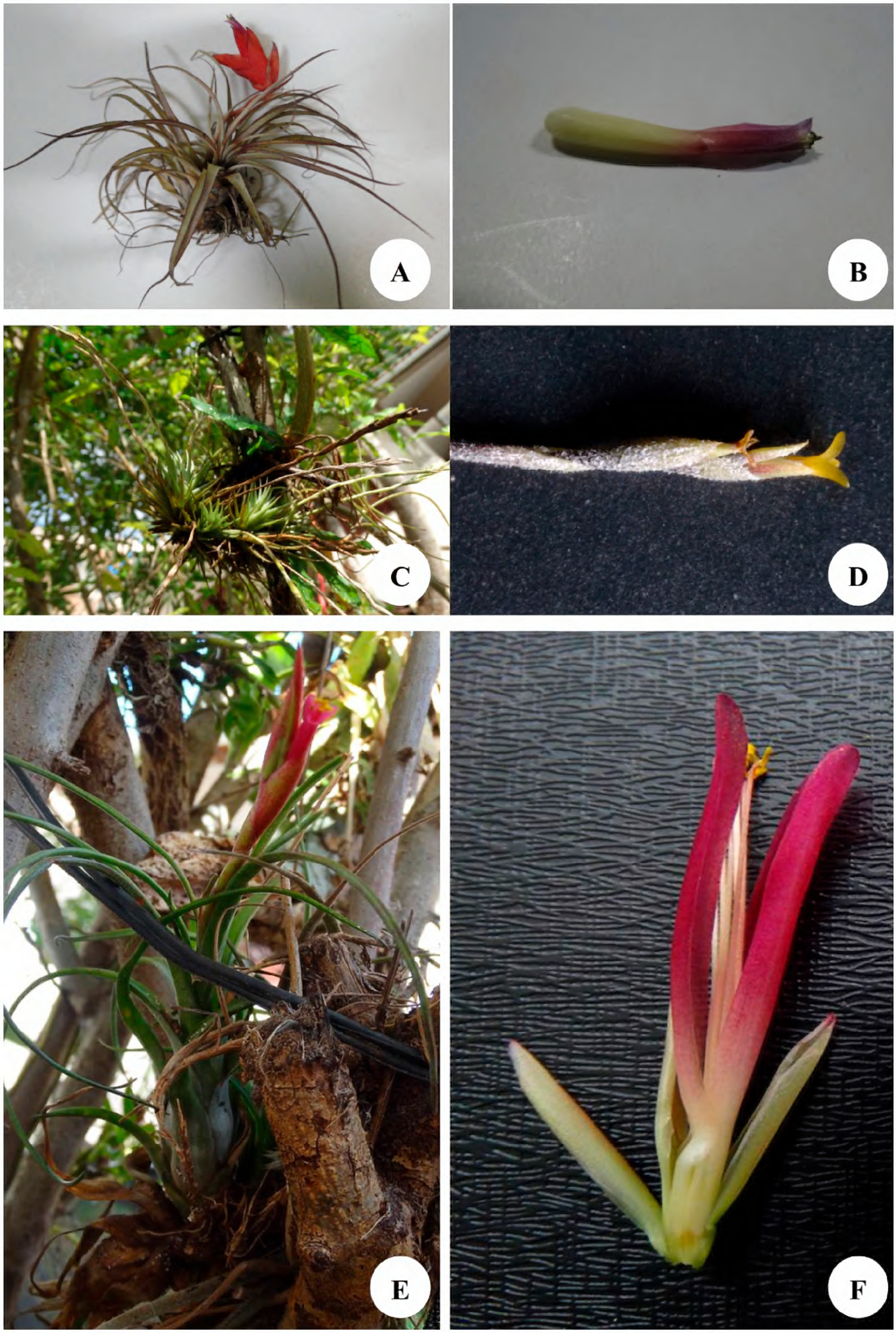

Figure 2. New records of *Tillandsia* for Maranhão state. **A, B.** *Tillandsia kegeliana*: (**A**) habit; (**B**) detail of the flower. **C, D.** *Tillandsia loliacea*: (**C**) vegetative body; (**D**) detail of the flower. **E, F.** *Tillandsia paraensis*: (E) vegetative body; (**F**) detail of the flower.

pink,; stamens ca 4.5 cm long, exserted, adnnate to petals for 1.2 cm; filaments ca 3.5 cm long, whitish-rose; ovary ca 8 × 2 mm, oval; stigma conduplicate-spiral. Fruits: capsule elliptic, 2.5–3.5 × 0.6-0.7 cm. Seeds: unknown.

New records. Brazil: Maranhão: Pedro do Rosário, Igarapé da Ponte, afluente do Rio Pericumã (02°57′31″ S, 045°19′57″ W), 22.XI.2017 (fl.), *A.W.C. Ferreira 221* (MAR 10925).

***Tillandsia parvispica* Baker**, J. Bot. 25: 244. 1887.
Figure 3A, B

Type. Brazil, serra do Picu, Boa Vista, Glaziou 13258 (holotype: P!).

Identification. Plant: epiphyte, 51.1–62.2 cm tall when flowering; roots present, rigid; stem inconspicuous. Leaves: polystichous, forming rosettes, imbricated, erect-arched; sheath 3.6–6.9 × 3.7–4.3 cm long, distinct from the blade; blade 8.7–30 × 1–3 cm long, linear to lanceolate, apex long attenuated, caniculate, green, cinereous lepidote. Peduncle 14–35.9 cm long; peduncle bracts 3.4–13.1 × 0.6–1.5 cm, ovate, exceeding internodes, imbricate, hiding the peduncle by embracing most of it, greenish, lepidote. Inflorescence: 26.1–35 cm long, compound, erect, exceeding the leaves; branches 8.6–12.6 cm long, complanate; bracts primary: 3.8–4.7 × 1.1–1.2 cm, ovate, similar to peduncle bracts, erect, glabrous, attenuated apex. Floral bracts: 1.9–2.4 × 0.8–1.2 cm, ovate to slightly elliptic, apex apiculate, longer than the sepals, the lower ones strongly carinate, involving the sepals, green with apex reddish, lepidote. Flowers: many, distichous; sepals 1.3–1.8–2.1 × 0.4–0.6 cm, elliptic-lanceolate, connate, apex acute, carinate, green, glabrous; petals 4.2–4.6 × 0.5–0.6 cm, linear, apex subacute to rounded, slightly recurved tip, lilac; stamens 4.5–4.7 cm long, exserted, free; filaments cylindrical, whitish-lilac; ovary ca 5 mm long, oval-elliptic; style 4–4.5 cm, cylindrical; stigma conduplicate-spiral. Fruits: capsule, 2.3–3.7 cm long, green. Seeds: 2–3 mm long, feathery, appendages 1.5–2.9 cm long, plumose.

New records. Brazil: Maranhão: Codó municipality, Roncador, próximo à comunidade Betânia do Mundico (04°30′43″ S, 043°49′49″ W), 5.III.2015 (fr.), *E. Guarçoni et al. 2265* (BMA 795); comunidade Betânia do Mundico, 66 m, (04°28′01″ S, 043°45′21″ W), 21.VIII.2015 (fr.), *E. Guarçoni et al. 2388* (BMA 1125); *E. Guarçoni et al. 2397* (BMA 1275).

***Tillandsia recurvata* (L.) L.**, Sp. pl., ed. 2: 410. 1762.
Figure 3C, D

Type. *Sloane s n* (holotype BM, GH photo), without exact locality, Jamaica.

Identification. Plant: epiphyte, 5.1–6.7 cm tall in flowering; roots present, rigid; stem elongated. Leaves: ca 15, distichous, strongly curved; sheath 5.5–7.5 × 3–4 mm, elliptic-ovate, distinct; blade 4.3–5 × 0.1 cm, linear-triangular, apex attenuated, green, densely cinereous-lepidote. Peduncle 3.8–8.5 cm long, green; peduncle bracts ca 1.1 cm long, lanceolate, apex acuminate, shorter than the internodes, white-lepidote. Inflorescence: 1–1.5 cm long, simple, erect, not complanate, distichous when 2, exceeding the leaves; floral bracts: ca 7.5–8 × 3–3.5 mm, elliptic-lanceolate, apex acute, shorter than the sepals, vinaceous, densely cinereous-lepidote. Flowers: 1 or 2; sepals 0.7–2 × 0.7 cm, lanceolate, apex acute, green, glabrous; petals ca 7–9 × 1–1.2 mm, linear, apex rounded, strongly recurved, lilac; stamens ca 4.5 mm long, included, adnate to the base of the ovary; filament cylindrical; ovary ca 3 mm long, ellipsoid; style 0.8–1 mm long, conic; stigma simple-erect. Fruits: capsule, 2.3–2.6 cm long, green Seeds: ca 2 mm long, appendages 1.8–2 cm long, plumose.

New records. Brazil: Maranhão: São João do Sóter, Fazenda Boa Vista, à margem da estrada, próximo ao rio Itapecuru (05°11′32″ S, 043°44′51″ W), 30.VII.2015 (fr.), *A.W.C. Ferreira et al. 203* (MAR 10926; BMA 1745).

Tillandsia tenuifolia* var. *tenuifolia L., Sp. Pl. 286. 1753.
Figure 3E, F

Type. Without locality, *Royen s n (L).*

Identification. Plant: epiphyte, ca 23.5 cm tall when flowering; conspicuous stem in adult plants; roots present, rigid. Leaves: scarcely secund, arcuate, imbricated, green; sheath 1.5–2 × 0.4–0.6 cm, indistinct from blade; blade ca 7–12 cm long, narrowly-triangular, canaliculated, flat near the base, apex acuminate, green, white lepidote. Peduncle 7–9 cm long, slightly arcuate; peduncle bracts 1–1.3 × 0.3–0.6 cm, narrowly-elliptic, exceeding the internodes, apex acuminate, green, and white lepidote. Inflorescence: ca 8.7 cm tall, simple, pendulous, exceeding the leaves; floral bracts: 1–2 × 0.4–0.6 cm, elliptical, ecarinate, apex slightly cuspidate, rose, sparsely lepidote in the apex. Flowers: many, polystichous; sepals 0.8–1.2 × 0.4 cm, lanceolate, anterior free and posterior connate up to half, carinate, apex acute, rose, glabrous; petals 1.4–1.8 × 0.5–0.6 cm, elliptic to spatulate, apex obtuse, slightly recurved, white; stamens ca 1.3 cm long, included, antesepalous free and antepetalous adnate ca 2/3; filament complanate; ovary ca 3 mm long, ovoid; style longer than the ovary; stigma simple-erect. Fruits: capsule, 2–3 cm long, dark green. Seeds: unknown.

New records. Brazil: Maranhão: Cândido Mendes, Fazenda Sete Irmãos, próximo a represa Pirarucu (01°51′07″ S, 045°45′50″ W), 28.IV.2017 (fl.), *A.W.C. Ferreira 220* (MAR 10927).

Discussion

Tillandsia kegeliana occurs in seasonal forest remnants of Alagoas, Bahia, Paraíba, and Pernambuco states, Brazil (Siqueira-Filho and Leme 2006, Pontes and Agra 2006). According to Siqueira-Filho and Leme (2006), the species may be close to extinction in Alagoas and

Figure 3. New records of *Tillandsia* for Maranhão state. **A, B.** *Tillandsia parvispica*: (**A**) vegetative body; (**B**) detail of the inflorescence with flower. **C, D.** *Tillandsia* tenuifolia: (C) habit; (**D**) **d**etail of the inflorescence. **E, F.** *Tillandsia recurvata*: (**E**) habit; (**F**) detail of the flower.

Pernambuco, and despite considerable collection efforts, no specimen has been found in any forest fragment sampled by the authors. In Paraíba state, the species has been reported to be very rare (Pontes and Agra 2006). In Maranhão, *T. kegeliana* was found as an epiphyte in an area of riparian forest in the Amazon forest biome. This species occurs in the canopy of the tallest trees along riverbanks and forms populations of only a few individuals. This is the first report of occurrence of *T. kegeliana* for the state of Maranhão and outside the area of the Atlantic Forest domain. *Tillandsia kegeliana* is similar a *T. concolor* L.B.Sm., which does not occur in Brazil. *Tillandsia kegeliana* can be recognized by presenting inflorescence with flower distichous, complanate; floral bracts strongly incurved; fleshy, minutely rugulose and blackish when dry; stamens and style exserted.

Tillandsia loliacea has a wide distribution, occurring in Argentina, Bolivia, Brazil, Paraguay, and Peru (Smith and Downs 1977). In Brazil, this species occurs in the states of Alagoas, Bahia, Ceará, Espírito Santo, Federal District, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraíba, Paraná, Pernambuco, Piauí, Rio Grande do Norte, Rio Grande do Sul, São Paulo and Sergipe, in Deciduous and Semideciduous Seasonal Forests, and in the forests located in the Pampa, Caatinga (stricto sensu), and Cerrado biomes (Büneker et al. 2015, Flora do Brasil 2018). According to Fiorato (2009), *T. loliacea* occurs in rupestrian fields and Caatinga in northeastern Brazil, with epiphytic or rupicolous habit. In Maranhão, *T. loliacea* was observed as epiphyte in the Cerrado domain, in the "Cerradão" phytophysiognomy. *Tillandsia loliacea* occurs on terminal branches of the phorophytes, forming populations with several individuals. *Tillandsia loliacea* is similar a *T. tricholepis* Baker. *Tillandsia loliacea* can be recognized by presenting sheaths indistinct from the blade, a linear-triangular leaf-blade, a densely cinereo-uslepidote, elliptical floral bracts, linear petal blades; elliptic-lanceolate sepals, stamens included, and a style that is shorter than the ovary.

Tillandsia paraensis occurs in Bolivia, Brazil, Colombia, Peru, Suriname, and Venezuela (Smith and Downs 1977). In Brazil, it occurs in the states of Acre, Alagoas, Amazonas, Bahia, Mato Grosso, Pará, Paraíba, Pernambuco, Rio Grande do Norte, and Rondônia (Flora of Brasil 2018), and presents an interesting disjunction between the Amazonian Campinaranas and the Atlantic Forest of northeastern Brazil. *Tillandsia paraensis* occurs in the Maranhão Amazonian rainforest as an epiphyte along water courses, usually on slender and sunny branches at least 10 m above the ground. Due to intensive deforestation and forest fragmentation in this area of Maranhão and because we observed fewer than 10 individuals in a forest fragment of approximately 10 ha, we conclude that this species is threatened locally. In this region, *T. paraensis* coexists with *T. kegeliana*, the most frequent species. *Tillandsia paraensis* is morphologically similar to *T. limae* L.B.Sm. However, *T. paraensis* can be recognized by presenting slightly branched inflorescence, the elliptical to lanceolate peduncle bracts, elliptic floral bracts, distichous flowers, sepals wholly covered by the floral bracts, all sepals carinate, elliptic-lanceolate, and free, and stamens and style exserted.

Tillandsia parvispica is endemic to Brazil (Gouda et al. 2018). In Brazil, this species occurs in Bahia, Minas Gerais, Mato Grosso, Pernambuco, and Rio de Janeiro (Versieux and Wendt 2006, Flora do Brasil 2018). We found *T. parvispica* in Maranhão state as an epiphyte in disturbed Cerrado areas, near the gallery forest. This species is relatively easy recognized due to its large size. Its phorophyte, *Handroanthus serratifolius* (Vahl) S.O.Grose, belongs to the family Bignoniaceae and is commonly called "pau-d'arco". *Tillandsia parvispica* is similar to *T. polystachia* Baker. However, *T. parvispica* can be recognized by its larger size, a peduncle larger than the leaves, ovate to slightly elliptic, green floral bracts, longer than the sepals, with apex apiculate and reddish, and stamens and style exserted.

Tillandsia recurvata is the bromeliad species with the widest distribution throughout the Americas, occurring from the United States to Argentina (Gouda et al. 2018). In Brazil, it occurs in the Alagoas, Bahia, Ceará, Espírito Santo, Federal Distric, Goiás, Mato Grosso do Sul, Minas Gerais, Paraíba, Paraná, Pernambuco, Piauí, Rio Grande do Norte, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, São Paulo, and Sergipe states and is always an epiphyte (Flora do Brasil 2018). In Maranhão, we observed this species as an epiphyte in a Cerrado area, where it formed populations of few individuals, in the "Cerradão". Tillandsia recurvata is morphologically similar to *T. mallemontii* Glaziou. However, *T. recurvata* be recognized by its small size, distichous leaves, shorter peduncle, lanceolate peduncle bracts, which are lower than the internodes, lanceolate sepals and linear petal blades.

Tillandsia tenuifolia has a wide geographic distribution, occurring from Cuba to Argentina (Smith and Downs 1977). In Brazil, this species is found in the states of Alagoas, Bahia, Ceará, Federal District, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Paraíba, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, São Paulo, and Sergipe (Flora do Brasil 2018). In Maranhão, we observed *T. tenuifolia* in a fragment of the terra firme Amazonian Forest, where it occurred as epiphyte to heights of 15 m. Tillandsia tenuifolia is morphologically similar to *T. montana* Reitz. However, *T. tenuifolia* can be recognized by presenting sheaths that are indistinct from the blade, lanceolate sepals, white to light pink petals, wider in the lower half, and a style that is longer than the ovary.

Our results contribute to the knowledge of the flora of Brazil and, in particular, of Maranhão. The species documented here are widespread in other Brazilian states, and we believe that they will found in other areas of Maranhão. Our new records demonstrate the need for more floristic inventories in Maranhão state, a region that is in fact little known.

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Authors' Contributions

EG collected and identified part of the material, made all descriptions and is responsible for the project funding. AFC confirmed the identifications of the botanical material and participated in the writing of the manuscript. ES collected and identified part of the material. AWCF collected and identified part of the material. MO collected some of the material.

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